EXPLANATION

CORRELATION OF UNITS

Qyf YOUNGER (INNER) ALLUVIAL FAN DEPOSITS (Holocene)--Unconsolidated fine- to coarse-grained sand, silt and gravel, coarser grained at heads of fans and in narrow canyons

Qyfo YOUNGER (OUTER) ALLUVIAL FAN DEPOSITS (Holocene)--Unconsolidated fine sand, silt, and clayey silt

Qb BASIN DEPOSITS (Holocene)--Unconsolidated, locally organic, plastic silt and silty clay

Qcl COLLUVIUM (Holocene)--Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions

Qs SAND DUNE AND BEACH DEPOSITS (Holocene)--Predominantly loose, medium- to coarse-grained, well-sorted sand but also includes pebbles, cobbles and silt. Thickness usually less than 6 m but in places may exceed 30 m

Qm MUD (Holocene)--Blue-gray, dark-gray or black unconsolidated silty clay and clay containing abundant organic matter, with interspersed lenses and layers of sand, peat, gravel, and shell fragments. Mud varies in thickness from zero, at landward edge, to as much as 40 m near north County line

Qal ALLUVIUM (Holocene)--Unconsolidated gravel, sand, silt and clay along streams. Less than a few meters thick in most places

Qof COARSE-GRAINED OLDER ALLUVIAL FAN AND STREAM TERRACE DEPOSITS (Pleistocene)--Poorly consolidated gravel, sand, and silt, coarser grained at heads of old fans and in narrow canyons

Qmt MARINE TERRACE DEPOSITS (Pleistocene)--Poorly consolidated and poorly indurated well- to poorly-sorted sand and gravel. Thickness variable but probably less than 30 m

PURISIMA FORMATION (upper Miocene and Pliocene)--Locally divided into:

Tptu TUNITAS SANDSTONE MEMBER (Pliocene)--The name Tunitas Member proposed and defined by Cummings, Touring, and Brabb (1962, p. 204, 208), is here adopted as Tunitas Sandstone Member. Greenish-gray to light-gray, pale orange, or greenish-brown, very fine- to medium-grained sandstone with clay matrix. Concretions generally less than 30 cm across are present locally. Tunitas ranges in thickness from 75 m at type section to 122 m elsewhere

Tpl LOBITOS MUDSTONE MEMBER (Pliocene)--The name Lobitos Member, proposed and defined by Cummings, Touring and Brabb (1962, p. 204); is here adopted as Lobitos Mudstone Member. Member consists of dark-gray to light-gray and shades of brown, unbedded, silty mudstone. Lobitos has a maximum thickness of 140 m

Tpsg SAN GREGORIO SANDSTONE MEMBER (Pliocene)--The name San Gregorio Member, proposed by Cummings, Touring, and Brabb (1962, p. 202, 204), is here adopted as San Gregorio Sandstone Member. Greenish-gray to light brown fine- to coarse-grained sandstone containing calcareous concretions less than 30 cm across. San Gregorio Member ranges in thickness from 95 m at type section to about 140 m elsewhere

Tpp POMPONIO MUDSTONE MEMBER (Pliocene)--The name Pomponio Member, proposed and defined by Cummings, Touring, and Brabb (1962, p. 202), is here adopted as Pomponio Mudstone Member. Gray to white porcelaneous shale and mudstone, in places rhythmically bedded with alternating layers of non-siliceous mudstone. This unit resembles Santa Cruz Mudstone and Lambert Shale. At its type section in Pomponio Creek, member is 700 m thick

Tpt TAHANA MEMBER (upper Miocene and Pliocene)--This name, proposed and defined by Cummings, Touring, and Brabb (1962, p. 197-201), is here adopted. Greenish-gray to white or buff, medium- to very fine-grained sandstone and siltstone, with some silty mudstone. Locally, such as at San Gregorio State Beach, sandstone is tuffaceous and it weathers white. Near Memorial Park, this member includes dark-gray porcelaneous mudstone. Pebble conglomerate occurs near base from Memorial Park eastward. Maximum thickness 655 m

Tsc SANTA CRUZ MUDSTONE (upper Miocene)--Brown and gray to light-gray, buff, and light yellow porcelaneous shale, and mudstone with nonsiliceous mudstone and siltstone and minor amounts of sandstone. Santa Cruz Mudstone is more than 1000 m thick

Tm MONTEREY FORMATION (middle Miocene) --Grayish-brown and brownish-black to very pale orange and white, porcelaneous shale with chert, porcelaneous mudstone. Impure diatomite, calcareous claystone, and with small amounts of siltstone and sandstone near base. Monterey is generally more siliceous than Santa Cruz Mudstone but closely resembles parts of Purisima Formation, especially Pomponio Mudstone Member. Thickness ranges from 120 to 450 m

Tuv UNNAMED SEDIMENTARY AND VOLCANIC ROCKS (Oligocene and Miocene)--Coarse-grained and pebbly, cross-bedded, hard sandstone. Includes andesite breccia. About 135 m thick

Tls LAMBERT SHALE AND SAN LORENZO FORMATION, UNDIVIDED (middle and upper Eocene, Oligocene, and lower Miocene)--Brown and dark-gray to gray, brown, mudstone, siltstone and shale. Includes some beds of fine- to coarse-grained sandstone. Lambert Shale is generally more siliceous than San Lorenzo Formation, but the two units cannot be distinguished where out of stratigraphic sequence and without fossils

Tls LAMBERT SHALE (Oligocene and lower Miocene)--Dark-gray to pinkish brown, moderately well-cemented mudstone, siltstone and claystone. Chert occurs in a few places in upper part of section, and sandstone bodies up to 30 m thick, glauconitic sandstone beds, and fine-grained dolomite are present in places. Lambert Shale is generally more siliceous than San Lorenzo Formation and less siliceous than Monterey Shale. It resembles Santa Cruz Mudstone and parts of Purisima Formation. Lambert Shale is about 1460 m thick

Tmb MINDEGO BASALT AND RELATED VOLCANIC ROCKS (Oligocene and(or) Miocene)--Basaltic volcanic rock, both extrusive and intrusive. Extrusive rock is primarily dark gray to orange brown to greenish gray flow breccia, but includes lesser amounts of tuffs, pillow lavas, and flows. Extrusive rocks have a maximum thickness of 120 m. Intrusive rock is dark greenish gray to orange brown and medium to coarsely crystalline. It commonly weathers spheroidally, and occurs as roughly tabular bodies up to 180 m thick intruding older sedimentary rocks. Minor amounts of sandstone and mudstone are locally included

SAN LORENZO FORMATION (middle and upper Eocene and Oligocene)--In map area, consists only of:

Tst TWOBAR SHALE MEMBER (middle and upper Eocene)--Olive-gray to brown laminated shale with some mudstone. Includes a few thin interbeds of very fine-grained sandstone. About 240 m thick

Tb BUTANO SANDSTONE (lower and middle Eocene)--Light-gray to buff, very fine- to very coarse-grained arkosic sandstone in thin to very thick beds interbedded with dark-gray to brown mudstone and shale. Amount of mudstone and shale varies from 10 to 90 percent of volume of formation. About 3000 m thick

Kpp PIGEON POINT FORMATION (Upper Cretaceous)--Sandstone and conglomerate, interbedded with siltstone and mudstone and pebbly mudstone. Sandstone is fine to coarse grained, arkosic, and gray to greenish gray; mudstone and siltstone are gray or black to buff. Conglomerate contains well-rounded pebbles, cobbles, and boulders of red and gray fine-grained and porphyritic felsic volcanic rocks, granitic rocks, chert, quartzite, dark-colored metamorphic rock, limestone, and clastic sedimentary rocks. Pigeon Point Formation is estimated to be more than 2600 m thick

KJv UNNAMED VOLCANIC ROCKS (Jurassic or Cretaceous)--Dark-gray, dense, finely-crystalline felsic volcanic rock, with quartz and albite phenocrysts. Exposed only west of Pescadero. Thickness unknown

SYMBOLS

Contact — Dashes where approximately located

Anticline — Fold axis showing trace of axial plane and direction of plunge. Approximately located

Syncline

Fault — Dashes where approximately located; dotted where concealed or inferred. U, upthrown side; D, downthrown side. Query indicates that further extent of fault is unknown

Inclined — Strike and dip of beds

Vertical

Overturned

Horizontal

NOTES

1. Quaternary geology compiled mainly from LaJoie and others (1974).
2. Bedrock geology compiled mainly from R. M. Touring (1959). Some data from Cummings (1960) and from unpublished mapping by geologists in petroleum companies. Some field work by E. E. Brabb in 1968 and 1977.
3. Landslides are purposely omitted from this map. For landslides, see report by Brabb and Pampeyan (1972).
4. For different interpretation of the San Gregorio fault zone, see maps by Brown (1972) and Weber and others (1979).

REFERENCES CITED

Brabb, E. E., and Pampeyan, E. H., 1972, Preliminary map of landslides in San Mateo County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-344.

Brown, R. D., Jr., 1972, Active faults, probable active faults, and associated fracture zones, San Mateo County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-355, scale 1:62,500.

Cummings, J. C., 1960, Geology of the Langley Hill-Waterman Gap area, Santa Cruz Mountains, California: Stanford, Calif., Stanford University, Ph.D. thesis, scale 1:24,000.

Cummings, J. C., Touring, R. M., and Brabb, E. E., 1962, Geology of the northern Santa Cruz Mountains, California: California Division of Mines and Geology Bulletin 181, p. 179-220, scale 1:48,000.

LaJoie, K. R., Helley, E. J., Nichols, D. R., and Burke, D. B., 1974, Geologic map of unconsolidated and moderately consolidated deposits of San Mateo County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-575, scale 1:62,500.

Touring, R. M., 1959, Structure and stratigraphy of the La Honda and San Gregorio quadrangles, San Mateo County, California: Ann Arbor, Mich., University Microfilms, 228 p.

Weber, G. E., Lajoie, K. R., and Griggs, G. B., 1979, Coastal tectonics and coastal geologic hazards in Santa Cruz and San Mateo Counties, California: Geological Society of America, Cordilleran Section, field trip guide, 187 p.

INDEX MAP

Base from U.S. Geological Survey, San Gregorio and La Honda, 1961.

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

UTM GRID AND 1966 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. Geological Survey
OPEN-FILE REPORT
This report is preliminary and has not been edited or reviewed for conformity with Geological Survey Standards and nomenclature

PRELIMINARY GEOLOGIC MAP OF THE LA HONDA AND SAN GREGORIO QUADRANGLES, SAN MATEO COUNTY, CALIFORNIA

Compiled by

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1980